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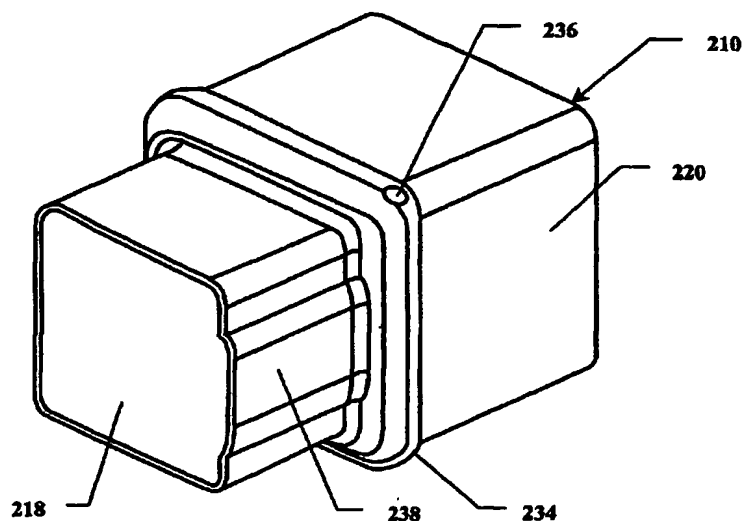
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[Continued on next page]

(54) Title: **COLLISION ENERGY-ABSORBING DEVICE**



(57) Abstract: A collision energy-absorbing device includes a body member connected between the frame assembly of a motor vehicle and a bumper beam. The body member collapses as the bumper beam and the frame assembly are moved relatively toward one another during a vehicle collision. The body member has a first telescoping portion and a second telescoping portion that are connected by a connecting portion. The telescoping portions have different cross-sectional dimensions to enable the telescoping portions to move one within the other into collapsing telescoping relation as the body member collapses with the connecting portion being deformed and received between the telescoping portions. One or more protrusions extending from one of the telescoping portions interfere with relative movement of the other of the telescoping portions to retard movement of the telescoping portions into telescoping relation.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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## INTERNATIONAL SEARCH REPORT

International Application No.

PCT 03/11908

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F16F7/12 B60R19/34

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F16F B62D B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/022444 A1 (LAPIC STEPHEN M) 20 September 2001 (2001-09-20)	1-3, 7-10, 14, 15, 19-22, 26-29, 33-41, 46-48
Y	paragraph [0019] - paragraph [0020]; figures 2, 6, 7 paragraph [0027]	11-13, 23, 37-41, 49
Y	US 3 479 902 A (OKAMOTO KENJIRO) 25 November 1969 (1969-11-25)  abstract; figures	11-13, 23, 37-41, 49



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

25 September 2003

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/93/11908

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 24 27 764 A (VOLKSWAGENWERK AG) 2 January 1976 (1976-01-02)  claim 1; figure -----	11-13, 23, 37-41,49
A	DE 100 02 379 A (BENTELER WERKE AG) 2 August 2001 (2001-08-02) column 1, line 58 - line 61 -----	1
A	DE 42 40 237 A (GKN AUTOMOTIVE AG ; LOEHR & BROMKAMP GMBH (DE)) 1 June 1994 (1994-06-01) abstract -----	1
A	FR 2 730 025 A (LORRAINE LAMINAGE) 2 August 1996 (1996-08-02) -----	
A	EP 0 717 215 A (LORRAINE LAMINAGE) 19 June 1996 (1996-06-19) -----	
A	PATENT ABSTRACTS OF JAPAN vol. 014, no. 440 (M-1028), 20 September 1990 (1990-09-20) & JP 02 175452 A (ISUZU MOTORS LTD), 6 July 1990 (1990-07-06) abstract -----	

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/03/11908

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2001022444	A1	20-09-2001	US 6293587 B1 BR 0100956 A	25-09-2001 30-10-2001
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JP 02175452	A	06-07-1990	NONE	

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/11908

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-3, 7-15, 19-23, 33-41, 45-49

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 26; 2, 3, 7-15, 19-23, 25, 27-29, 33-41, 45-49

means to interfere with the collapsing of a substantially tubular collision energy-absorbing device  
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2. claims: 52; 4-6, 16-18, 30-32, 42-44, 53, 54

means to hasten the collapsing of a substantially tubular collision energy-absorbing device  
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3. claims: 57, 60; 24, 25, 50, 51

means to allow for offset impact  
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